

150

2

Tortugas, last six weeks 1930
~~July~~ July 9 - Aug. 18.

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Had a planning meeting at Dry Tortugas. Summer, 1930.

1930

July 10, Afternoon bet. 3.30 + 4.30 a.m.
 #2-30 Bush Key Reef, channel end (South)
 Chloride of lime 2 tide pools
 Got some fish + few mollusks, Squilla
 + Microphysa 1 or 2 hermits

crustaceans are made active but not
 nearly so affected as fish if at all.

Got 2 of ripiphanus little fish that
 Dr. Smiley thought rare, like little yellow
 or dull orange liparid -


Three amphipods, large one about
 120 mm. long. when moderately extended a curved
~~smaller one.~~  plicate  back olive green
 gills more olive

* bet. each two annules fine
 of jointing is olive yellow
 sides + ventral olive
 buff.

2 smaller worms salmon color to the sides +
 first third salmon + last fourth
 intervening distance with drab grey tinge

in locomoting ventral bundles of setae are
 spread out fanwise

dark ^{nanas} stripe of green down
 mid dorsal line

 very much so +
 are apparently very
 efficient paddles

July 10-1930

I went out on west side of Soggerhead bet
cook house + half way to light house pier
and saw but one or two hermits in all. True
it was high tide, about 11.00 a.m.

#1-30 White Hermit from hole
in old pc. coral rock. (frag) in 2 ft.
water. and a *Sicyonia*, from old
line filled with hermits C. tricolor
both from ^{East} west side Soggerhead
swim beach, off sleeping quarters.
Also squilla from another hole in
piece of coral.

#3-30 2 little *Synalphea*
milky transparent one with largest
chela / with ochraceous buff alminar tract
except intestine with fore gut tan
with light stripe down middle longi-
tudinally

Other one with light apple green ovaries
& few large oil green eggs, found under
fore gut & eyes, rest of stomach region
ochraceous buff as above.

#3-30 Hard, stony coral bottom
July 11 - 1930 at 2 1/2 fms on south end
Brilliant Shoal, boat dredge 4 hauls

One *Podochela*^{color} like piece of dead coral rock.

One *Palaemon*? eyes with merest tinge of apple green
for cornea, & mere spot of Vandyke brown where stomach
is located

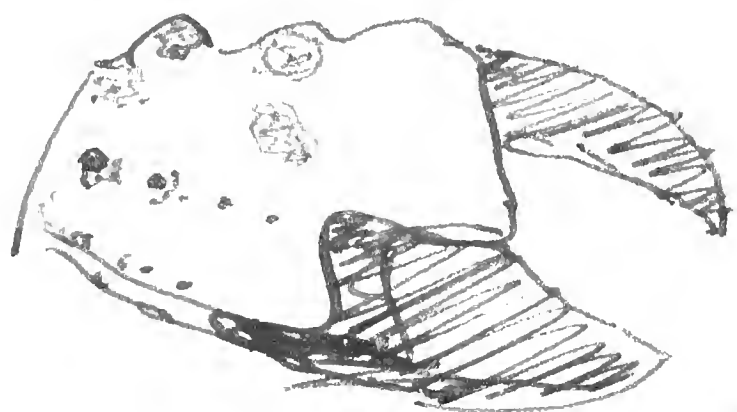
#3a -30 6 hauls on small shoal bet
south end Brilliant Shoal & north
end Soggerhead Key Shoal.

Misc invertebrates isopods from millipora
cysts & galls.

More weedy grassy bottom but
still lots of coral.

#4-30 July 11 afternoon from 3.30 - 6 p.m.
 "Channel" (north) end of Bird Key Reef
 Collected over rocks on outer ^{side} a northwest corner.

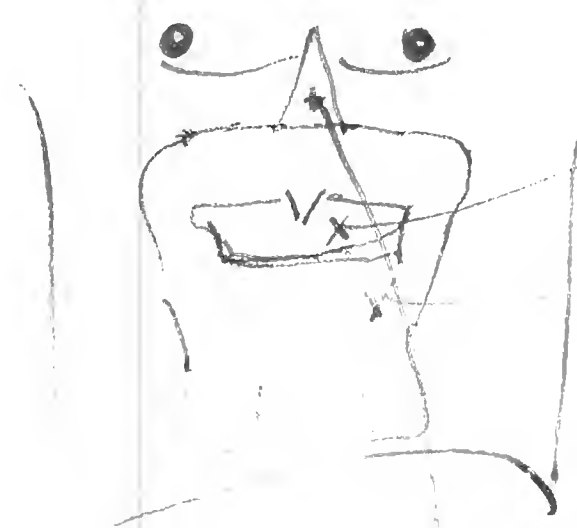
Sumpy *Actea* tips of granulated nodules
~~live brown~~ ^{thick red} more or less mottled, + particularly
 hinder + outer edges with light vinaceous cinnamon
 in sulci throughout ~~same~~ about pinkish
 buff



Head mostly whitish
 (crosshatched) fingers
 + lower border of palum
 for about half distance
 seal brown granules hazel; corneae same
 other color of head like canapace
 Under parts porcelain white, becoming
 more buff toward margins + under part
 of legs speckled with, ~~to~~ thick red
 one large conspicuous spot on each
 coxal joint

#4-30 med sized Crangon
pale olive green all over

(3 spec. are
bright little
+ one other fingered
? one? greenish fingered
? yellowish?)

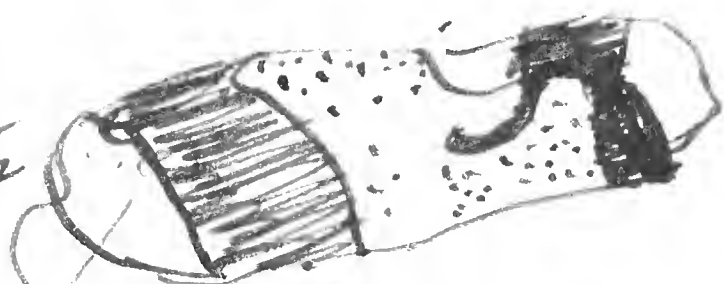


dull white area

— stomach area a darker olive green

hinder margin
of each segment
appear tawny olive but on ting
due inspection appear to be ting
crimson speckles on the greenish ground

one or two
faint spots



dark shaded areas
bet. Tawny & Tawny olive
nearer former
spots olive

~~dull~~ china white

legs greenish tinge, practically transparent
antennae, ^{darkly} ringed with olive giving them a
greenish cast

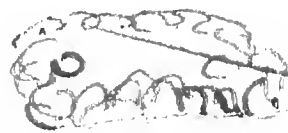
small hard tawny x tawny olive like
larger with fingers darker almost
Vandyke brown

larger plain brown Crangon colored
like preceding but more uniformly
so, ^{large} head practically one color, movable
finger becoming lighter toward tip, extreme
tip translucent china white

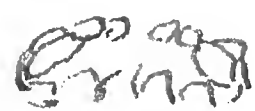
4-30 little red banded, white bodied
Synalphens.

and along
inter margin
of movable
fingers

body pale transparent, apple green
lighter behind + darkest in stomach
mass color runs up to base of fingers
on smaller cheliped; and onto base
of larger cheliped where it is almost
whitish before red begins. Anterior half
and fingers of larger cheliped + fingers
of smaller cheliped most brilliant
+ striking rose red fingers little
paler because thinner, + little
paler toward whitish half of hand
deepest at ant. approaching ant. of
movable finger and at base of fixed
finger + hand adjacent palm



carmine ring about eyes



eyes are whitish
grayish (black with
death pit) carmine
ring about them which
is flat behind

legs are carmine speckled principally on
upper surface of protodur + next on sides
of protodur very sparsely if at all
elsewhere. chiefly on last ambulatory legs
on more anterior pairs. which have little pits
on distal end of carpus + scarcely more than line on
rest of carpus + protodur, prox joints full of spots

canopace & calipers

#4.30

little black cat.

gray #7.

Shiny black with some ~~shale~~ color markings
 eye stalks with strong stripe of lighter #9
 gray. Legs white with few back lines
 practically concealed by bushy hairs of
 cream color, but more drab, or dull
 cream colored

5-30 July 12, 1930

Mid Section Bird Key Reef.
(really northern part of South Sect.)
there only seen to be two pts this year)
outer margin of reef gone over
chloride of lime showed up some
crustaceans that would otherwise
have not been seen got a dose of
Amphioxus spines in finger.

~~Hand~~

6-30 Boat dredge July 13-1930

Left at 8.20 am.

Ar. No. 2 Red buoy log. 50.6 courses.

Boat { Sounding at 8.50
dredge } = 18 fms due S. of buoy.

18-20 fms

net over at 8.54 wh. at 9.10

Sounding
= 20 fms

Bottom sand + forams.
Parthenopid crab.

~~Hand~~

7-30

9.19 - 9.25 a.m. July 13-1930

20 fms.

net down at
4.30.

Boat dredge
at 20 fms

20 fms.

up at 9.45

Soft grey mud

many
valves of small
bivalves

2 shrimp and scyllarid.
many resting shells (empty)

Haul

8 - 30

July 13 - 1930

Boat
dredge
35-40 fms

At 10.15 sounding

35 fms.

10.35 start up. 40 fms

Very little mud

Syngnathus with red flecks on
under side at base of antennae
Alpheid shrimp, red speckled
with radiating lines lines of
spots radiating out + forward
from eyes, over scales + antennae
+ antennular peduncles.

9 - 30 July 13 - 1930

Sounding at 10.40

Boat = 60 fms net over at 11.00 a.m.

dredge start up at 11.15

= 80 fms at end.

Haul

July 13 - 1930

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#10-30

12 noon 80 fms. net over at 12.05

Start up at 12.55 on deck 1.30 p.m.

= Clean Haul

30 ft
Otter-haul
in 80 fms
Beginning +
end.

Great many large spider crabs
fishes of several kinds
+ dead + broken machine
shells, some with sea anemones
attached, other anemones of
same kind attached to shells
and to crabs themselves.

W. side
all right
to go

Barnacles on spider crabs within +
without. for temp + P.H.'s see page 183

Start back at 3 p.m.

log reading 54.35

log ready at 4.40 p.m.

at red No. 2. bay. 68.35

= 14.00 knots.

at 4.55 recd
log on way home

70.60

in 15 min

2.25 knots
9 miles per hr.

Back at 5.15.

162

July 14 - 1950

Haul #

Course S.

77-30

Ar. 8.30 a.m. Log 71.70

10.06

"

85.90

Sounding = 70 fms. Run. 10.08 -
10.22. Sound. 117. fms.

Ar. 11.20

417 fms cable out.

11.30

475

"

"

"

3085

11.45

500

"

"

"

Otter haul

in 117 - 00 fms.

2 *Phormin* in test
 one with young inside
 other with male attached
 at one end.
 1 *Argyropelices*

July 14-1930

163

Haul, #12-30

Run back till 2.20. net over
in 80 fms. on due west course.

30 ft

Other haul

in 80-

60 fms

2.41 3 p.m. 305 fms cable out.

Haul in at 3.20. on deck at 4.

60 fms. [deep]
[at end]

Got a single Balanus
amphitrite on water logged
mangrove root (to Visscher)

Haul much like #10-30.

Soft mud. fewer spider crabs
but about as many mollusks
a murinda + an apris

couple of small anemones +
barnacles on the ~~the~~ spider
crabs. got larger

Stenocin ~~sp~~, seen on either this
a #10 haul...

164

July 15 - 1930

Haul # 13 - 1930.

08.25^{a.m.} at buoy

log. 41.8 course S.

at 10.08 am log. 55.0.

turn due west at 10.14 to 10.18

Sound at 10.20 = 80.8m.

net over. (~~F3~~ made 1 fix, 1/2 mi
turner haul full of "muck".Course SW x S. } 30 foot otter haul
240 fms. cableHaul is started at 11.54. up at 12.25 p.m.
Sounding = 9 150 fms.Empty haul. several touched bot.
siphonophores, polh, + 2 crabs.

Sta. 14 - 30

14
C
h
o
k
2
1

110
fms

25-

ce. 25
05

long.

rate
color

1

Sta. 14 - 30

July. 15-1930

(150-110
fms)

14-30.

See under haul

Course from last stop. N. by E.

her over in 110 fms. at 12.25
on bot. at 1.10.

Haul in at 1.52 at surface. &

2.35 p.m. Start home at 3.05

1 hr & 35 mins to No. 2 buoy.

Soft grey mud haul.

no end of mchms.

Some crabs; / hermit crabs
& shrimp etc

~~noted~~

quite a number of *Planarias*.

+ *Acanthocarpus* as in
all preceding hauls.

10-12 fms. 30 ft. Otter haul

Haul #15 - 30 July 16, 1930.

dry channel as indicated
on chart. nice weedy haul.
Crustacea, on large bivalves
Synalpheus, + some smaller ones;
2 Stenorhynchus.

= Haul # 16 bis

Haul which would have been #16
Cable broke net lost boards
+ all hills + men spent all
afternoon hunting net diving
hood and all


Boat
was
thrown
and to
mark
place.

July. 17, = 18 on my labels.
 Started out to hunt near by
 water too rough to even pick up
 brown.

On way back got two small
 Loggerhead sponges not far off
 dock (west side)

#1 ^{sponges} Larger sponge; bottom of sponge
 could scarcely be crammed into pail
 top dia sponge 320 mm. x 260 mm high

#2 Sponge cut nicely in same
 sized pail about 2 inches below
 rim. top dia. 260 mm. by 190
 high. one size due to pe. hook
 and bottom ~~was~~ ^{or} getting it up with
 sponge hook about 160 high
 for middle of traffula pc. about 4-6
 on base



168 July 18, 1930

July 18, another day too windy for Runt
trawl

Collected Hermit East + West side
Id. Low tide 9.45 ~~am~~

#16-30

On East side strong wind & waves
made it very difficult to pick up
spec.

in deep quiet crevice where there
was a chunk of millipora on a rock
picked off hermit between low tides
(all hermit low, more an encrusting form).

all Calappa tiliacea.

2 large
2 small
5 med.
1 large
10

Hermit
old
millipora
on rock

too difficult in rush
of waves beating over
rock to look further
in crevice. Left
parallel to shore

on rock got 2 newtuna
1 halibut

off rock carrying millipora
got coral with barnacle to fisher
& one of holes in it 2 Alpheids
(bottled separately & color noted)

and a whole lot in
is in it
real

~~Collected~~ #16 + 17 - 30

East side Loggerhead Key, from Rocks, S.
& Lighthouse dock.

#17-30

From a sea urchin pocket right at crest of rocks in full force of waves, which I enlarged, also kind cleft. $\frac{1}{3}$ rather ~~a~~ cracks perpendicular to shore got:

from urchin cavity, ligone for 2, but containing only one urchin.

Very sheltered removed sea urchin to which some tiny hermit was sticking

Albinaria tricolor.

7 large, a fairly large (small)

36 tiny to small

24 tiny

67

And 5 neritina from on top of rocks in full force of waves.

little pygogonid from pc. of which included

#18-30

under 2 ft. water

Under, ^{overhang} rocks on flat of ledge south of light house dock, (West side bigger head Key) outside, a toward interface of rock.

Calappa 3 tiny
Wich 4 small
9 med
3 large (fairly)
22

+ 1 *Paguristes* ^{in cones} grayi
1 little *milne*
1 *Chit. tricolor* for cleft
higher up on rock ridge
~~and~~ quite water.

1 *neritina*
1 *litorea*
2 *collistoma*?

July 18, 1930

West side
Soggyhead Key

#19-30

Outside on sloping flat of rock
under little water, with (strong)
active wave action, west side, south of
light house dock. ^{deep} water not over foot
9 medium sized *Calcinus tiliceus*
3 hermitina

#20-30

West
side

On surface of flat rock
almost but not ~~at~~ bare of
water, hermits just submerged

in quiet almost standing water
behind line of rocks.
~~over on~~

19 Calcinus tiliceus

{ 1 large?
= { 3 near large
45 med.

Chb. tricolor.

1 very tiny
3 tiny
12 small
3 med
7 large

26 (26)

{ good wave action both
sides island this day
strong wind day before
morning. / of wave

even wind makes
stronger waves on
east side.

July 18, 1930 West side Loggerhead ¹⁷¹ Key.

#21-30 In quiet tide pool behind
sheltering ledge of rock & bet. it
and slope of beach in shallow
quiet rock bottom pool. ~~Small~~

Pool No. Williams No. 1371
Calcinus

5	Jan
54	me
28	mm
3	juv

90

Chl. tricol.

1	lar
4	n
14	mm
85	tiny of atm

104

3/14/66
Did not type these notes.

24 295

3/14/66

Did not type these notes.

L M

Williams No 180

Stomach of
Fish



Parthenope

4 (3.785 cc) gal.

9.46
61.44 grams

1 gram = 15.432
4 grams = 61.728 grams

2 Ounces
3 grams = 1 1/2

9.46 cc
9.50 cc to gram

grams
8 Tot gal

4 Tot gal

1 gram to
each 950 cc.

U. S. Nat. Mus.

Bur. of F

Smithsonian

Fish Hawk Sta.

July 18, 1930 West side Loggerhead ¹⁷¹ Key.

#21-30 In quiet tide pool behind
sheltering ledge of rock & bet. it
and slope of beach in shallow
quiet rock bottom pool. ~~near~~

Pool not over foot deep.

Calappa tibicen

5 fairly large
54 med + small
28 small
3 quite small + tiny

90

Ch. tricolor.

1 large
4 med.
14 small
85 tiny + medium
of about a day or very tiny

104

July 19, 1930

#22-

Over on Bird Key reef presumably at
 low tide waves quite high at
 11-11.30 a.m.

From a dead Conch (Strombus) shell
 shook a small Symbalpheid very light
 colored + translucent. Color noted ^{yellow} ~~ker.~~

~~Adriatic~~

northern section of
 Inside reef toward channel side
 in knee deep water.

White + one ~~sub~~ ^{light} reddish amphipod
 taken from brilliant red sponge
 color of red lead. p.c. saved

isford bottled with Symbalpheus above
 from cavity in old Strombus, that had
 been over grown by sponge.
 Also a squilla in a tunnel under
 sponge

picked up a ^{honeycombed} p.c. rock with hermit shells on it
 11 in all. 1 = Calcinus ^{Tilicery-} ~~sulcatus~~ rest

chain grayish with purple markings, color noted on yellow
 Also one shell Calliostoma.

#23-30 July 19, 1930

worms & one tiny squilla from large
rock brought up by ~~the~~ miller off reef
west side Sugarhead Key. little to
south of dock.

July 20, 1930

Got five grapsus grapsus off
of north sea wall with dip
net put ~~2~~ largest in dry
~~aquarium~~

~~2 next in size in~~
~~sea water~~

And one small black-cross-banded alpheid
from empty Conch shell

1 #
2 II
3 II
4 II

July 20-1930

Between capture & lab were out
of water in wire cage for about
1 1/4 hrs got two drenchings
water poured over them from qt & 1/2
bottle.

Dry lab. cage was set in
bucket ^{of water} & crabs ~~went~~ went

down below water level in
dark of bucket. | largest showed
tendency to climb

~~###~~ had been in water about 2 mins
when at 1.25 p.m. transferred

~~largest to sea water~~

~~next to dry jar~~

~~next to dry jar~~

~~next to sea water~~

~~smallest on dry sand scooped up
in front of walk leading to crew quarters~~

July 21-1930

Grapsus
grapsus

At 6:50[±] a.m. noticed that the smaller of the two crabs in sea water had died, likewise the little one on sand.

Large crab in salt water could raise itself body 3/4 side ways out of water + if often found in thin all made small crabs in salt water could not do this

Large one ~~was~~ in sea water was trying to get out but still as active as when first put in

This one died Aug 3, 1930

Also the 2 med sized ones in dry aquaria.

The water removed with tube from large salt water crab and little water added to replace that removed

They died of Aug 2, was very full that evening died of starvation

Just evening young brought me 2 Grapsus grapsus which were kept in a bucket with wire cage over it over night, one was up on side of cage this a.m. and smaller of two in water. This later was put into fresh water from which dead one was later of course water was renewed first

in wire cage side

7 p.m.

At 6:50[±] a.m.

in same act. this was filled with water so crab could not raise body out of water

The crab left in wire cage in bucket died about before 6:25 a.m. July 29, 1930. got hung up in piece of string attached to wall in bottom of cage, which left with 3 layers of jelly on it

At 11:20 put new of crab on sand. died prior to 6 am Aug 22.

July 21, 1930

Collected hermits off h. and
h. 2nd Lull Dr. Jefferson.

#24-30 9. a.m.

To right of a first break in
sea wall, on "grass" growing on
wallCalcinus

4 med-leg.

7 small

Chilodactylus

17 med-leg.

176 small to tiny

11

193

These crabs were on wall at
or immediately below water line.

July 21, 1930

Collected along N. seawall at +
just below water line wash of waves.

9-10 am.

Got:
#25-30

Calanus

24 med lg.

39 small

63

Clibanarius

2 lg.

39 small-feeding

41

Mollusks 24; tied in bag in tank.

#26-30

Collected on footing of ^{sea} wall at
intertide ~~below~~ preceding, grabbed
hand full now + then.

18 inches to 2 feet below water line

Got: Calanus

7 lge.

3 med

9 small

19

Clibanarius

10 lge

500 small to tiny

510

Paguristes grayi

1 small

with mollusks

1

Mollusks; tied in bag in tank ~~23~~

July 21 - 1930

27-30 Collected around h.E.
 bend of sea wall, water deep
 over my head at high tide, open
 & exposed + strong current.
 10 - 10:30 a.m.

Got. Calanus

10 lge
 43 med to small } 53

Chironomus

65 small to tiny } 65

Mollusks 10 feed in rehydrant

July 22 a.m. went out to East Key but tide was full trip was useless, visited Sand Key on the way no collect.

each noticed the other
July 22 - 1930 - water full of Clenophora 179
this a.m. but got nothing but
haze & turned

#28 - collected east of fort landing
dock. J.R. Jefferson, water glass
took clumps of *Porella* in dip net
& specimens came out of that.

Several small shrubs & a larger
striped one & a cross-striated
alpheid

From interstices of coral head & ^{captured}
got about 5 *millipede* *Tenuicrus* +
had "pockets" & works into which
they could withdraw
heads on edge of shoal west ridge J.R.
Jefferson on south edge of the shoal
Coral
columns
outside

X a small *Morgelia* from among
among *Porella* partly hole in rock base
of dump.

July 23 Photograph a Bird Key
whitish young = mostly 85% sorting.
bluish " = 2000. 50-75,000 birds

#29-30

July 23, 1930 Collected on Bush Key Reef

On inside, Fort side examined
 Stomachs shells got 2 large hermits
 + 2 others on flat of reef.

Also looked over coral heads
 got a small Stenopus out of one
 mostly dead maybe a young hippidae
 Picked up a ^{dead} Pith shell on flat of
 reef

Vincent gave me 15 Coral gull crabs
 cracked out of coral, also got two hermits
 with crab holes in them myself
 Also got one little striped shrimp Hippolyte?

July 24 - 1930

30-30 went down with Rood
off reef west side of Soggerhead about
half way bet. Sat. Hock + Light
house dock. in 12-15 feet of water
among coral heads that arose from
scoured sandy flat of broken coral
east of eel grass patches to within
nearly 100 feet of surface.

Brought up few rock frags &
one Porites clump, broke up in
bucket. few things saved.
Got an Astrophyton tangled in gorgonian.

So far have just showed barnacles in

~~Porites~~ Mullipora
found Crustaceans in Spongy coral
+ big Agaricium
+ Porites

The dredged shell
got Venus ca
+ Balanus from
mangrove root

see page 161 #10-30, other hand 183

Hept Ins.	13. <u>ph.</u>	<u>ph. cor.</u>	Base	Temp	Sal.
0	8.3		27.7	20.49	36.09
2	8.5		26.3	20.48	36.07
10	8.5		27.0	20.43	35.99
25	8.2		28.1	20.71	36.47
50	8.0		26.3	20.43	35.99
69½	8.1		27.6	20.42	35.97

July 24 - #31-30 On rocks
 below (S) light house dock east
 side Soggyhead Key, low tide
 3.49 p.m.

with ~~Tossil~~ retractor got several *Plagusia*
depressa + one *Percnon gibbesi*

Nothing numerous put in dry ag.
 jar at 10 of 6 this day (= 5.50 p.m.)
Plagusia depressa ditto @ 5.40 p.m.

All found this day except, *Pachygrapsus*
microps + large crabs from under
 thin sheet of encrusting coral which pried
 of rock + revealed coarse red hatched
 alpheid with deep green body, rough backed
 long filamentous + alpheids, also noted
 + well as little jet black *Paralichmanes*
 with white legs

July 24 Continued Octopus had one
 Plagusia I capture, had at
 least 10 tentacles wrapped over it

July 25 Plagusia + miltex dead this
 6 a.m. well in evening before

{ Cleared up spec. on tables rain
 this a.m. nothing else done.

July 25, 1930 Collect on south, channel
end Bush Key Reef. over lower end
where surf washes over ~~grass~~ got
number of hermits = Calappa ^{tilicea}

3 large

7 medium

7 med to small

14 quite small to quite small
(1-thing)

31 Calappa

1 Paguristes grey

3 little grayish hermits +

no Libinia tricolor

Water too rough a lot much motion
for Lib. a ~~hermit~~ receded to deeper
interstices bet. coral frags. which

I did not explore

Plenty of shore on north side of ^{large} rocks lining
lining deep channels lining reef near
southern channel end
Also got an Pag. gray ^{adiposa} ~~hermit~~

with large specimens on other end of reef

25

cont'd

July

25 cont'd

Petrolisthes is very active swimmers at least the little ones & I find big ones too for they are impossible to capture once they leave the rock on which you may find them. The little ones in a dish are exceedingly quick & active swimmers if disturbed. Can not get big ones to swim in dish ten or 20 inches across.

The little fellows are cream color with fine transverse lines of bet. ochraceous infus. & orange ochraceous. and scattered chestnut spots; there are small white spots all over, and teeth on ant. margin of carpus are a bright china white; there is a conspicuous fleck of ochraceous infus. on ant. margin of propodus of each walking leg; inside of mouth parts same is line of large purplish blue bet. lines of the back ~~the~~ galathea which has ochraceous & ochraceous infus. propodi with a narrow fleck on anterior margin. The teeth of ant. margin, ridge near hinder margin & hinder margin flecked with intensely bright almost luminous azure blue.

Verrill got a barnacle off this.

July 26-1930

Brough Cup Point

chump in bucket. little Petrel
on it. This mimic red encrusting
algae, color noted

Was down in diving 2000 but saw nothing
over turtle-grass but fishes got a
little crab + to mithras off of rock
dead coral, fishes lost mithras while looking
over coral.

34-30

189

July 27-1930

Sunday

Spent about an hour + then 15 mins more sitting on the bottom looking at crab holes in broken coral (small fragments zone) saw several holes for building fish which excavated their pits by bringing up a mouth full of sand and throwing it out on the circular beach surrounding them. They were but momentarily affected by my presence + soon went back to work! saw several crabs in burrows (mouths of tunnels) but caught none, after hrs waiting + occasional try. There did not appear to be several I thought I could get. Came up after hr + 55 mins moved boat over and by getting close scared little brown fingered lanternfish into his hole, he had been feeding on some junk near hole, it took him nearly entire 15 minutes I was in waiting for him to come out + feed again, which I showed handle of force down behind him (I had it dared + poised for just such an opportunity) Proved to be? a little micropterus

There was a little slender, large horn
bulging eyed fish that came out of same
hole to look around, at about 2 1/2 ft line
but saw him only the once.

many tiny sandhills, wailed around
among rocks (tiny rough coral pebbles)
digging in and under, lifting heavy &
moving about lumps several times then
hills & sinking down out of sight every time
I got near, so that under rock I could
not see well enough to pick them out of
from among lumps with forceps.

Got two *Platysmaris bicolor* & one
little white (coral sand) grey
hermit with few faint hamsphere
hazel to brown markings on legs.

Thought I had another tiny grey hermit in
tines of some shells, but do not find evidence of
it in shell as I examine dish.

July 28, 1930, Monday

Capt. Mills located net in 60 feet
 & after grapnels had been dragged
 into net, but in no part by which
 it could be lifted, Capt. Mills
 went down with hood quite
 a depth & hand work, big beads
 of perspiration standing all over
 him; with run of tide &
 moving about took full 100 feet
 of hose *

In a.m. H. Grave brought me
 two Palaemonids male & female.
 They had taken refuge in dish in
 his live car. Color noted

Out of net at #16 bis got some
 sponges, ^{few} mollusks, Strombus of small
 species, & amphipods & one Petrolia
 if I can find it in debris to be sorted

Haul # 35-30, July 29, 1930.

Sog. 18.1 at No. 2 buoy at 8.15 a.m.

Sog. 30.4 at 9.45 a.m.

Sound. 60 fms. 3 min. and 30 sec.

Sog. 31.8 = 80 fms 9.57 a.m.

Net over at 10. a.m. Hauled due W.

10.30 a.m. net on bottom. Haul in

@ 11.25 a.m. at surface. 11.50

Sounding 12 noon = 100 fms.

Soft mud, but only traces left in net.

Birustated fish 3-4 bunches of
flounders, 2 new fish
few Urchins

1 Porcellana 2 Ramina
several Ethusa

" Pyrum
" Adiantum
" (Senecio).

1 Octopus
1 Phormidium test.

7 spine
shells
3 covered

Haul #36 - 30 July 29, 1930

~~2~~ Sounded. 12.10. = 120 fms.

heaved over 12.15 on bolt. 12.52 p.m.
350 fms. cable out.

Hauled due east.

Haul in started at 1.38 p.m.

Sounded while ship not moving at 1.45 = 120 fms.
heaved up at 2.15; log over; log = 31.8

Made Red No. 2 log at 4 p.m. log = 46.2

1 hr. + 45 min. = 14.4 hrs

soft green mud, bases in net
few crabs? & few fish.

Fish stomachs of #35-30
#1-1930

Urophycis regius.

larval fish

pc. fish spines.

Ganglion chela and pincer
number of amphipods 2 saved.
+ other unident debris.

#2+3 1930 Hollardia sp. 2 sp.
first had no end of amphipods
about 10 or 15 of 3 or more species

label
2+3
= Fish #2

saved represented perhaps a tenth
or less of mass of badly digested
amphipods

Fish #3 Hollardia bottled rep.

40-50 X as many amphipods
represented in digested debris &
saved.

Fish #4 several amphipods badly digested
Peristedion gracile 1 young fish. saved with 1 amphipod.

Fish #5 nothing much but digested debris for
do species. stomach.

4 July 29-1930

#35-30

195

Fish #6. dozen or more Diastylus
fewer amphipods
dr. species. ~~perhaps~~ half A considerable other debris digested

Fish #7 reveal amphipods 3 eared
dr. species. Diastylus perhaps 1 ft? 6 eared
other much.

Fish #8 2 amphipods
dr. species 1 diastylus or? ostracod
not much else outside of
pieces in intestine

Fish #9 but 1 recognizable amphipod
dr. species in quite good shape.
nothing else but much digested stuff

Fish #10 contents blank
dr. species

Fish 11, 12, 13 ^{pract. nothing is #13} Callionymus sp. these contents mostly out of 11+12
Callionymus sp. ostracods, tiny mollusks, forams
cephopods bottled separately according
contents of 3 fish to groups.
3 other fish like 3d of these
with nothing much in aliment. tract

Fish #14 (Mantle # 425) Fish = Monolene sp.

Fish #15 (Mantle # 470) Cephalopods + amphipods most
= Coelorrhynchus sp. of these in contents.

196

July 31, 1930

{2 Aplysia taken in this haul. kept by Div. Mollusks Acc # 111/167

Haul # 37-30

Otter haul.

Sog at. 5.58 a.m.

41.9. first long.

@ #2 ^{Red} Bong 6.14 a.m.

43.9

Course South

16 min

2 miles

for N.2 red long

8.14 Sound

= 140 fms. by 64.95

21 miles.

180 fms 19 miles north

Under 8.20 a.m. Sound

180 fms.
@ 8.28

by 65.65

1.30 miles more

here we at 8.40 a.m. Course West.

695 fms cable at on bottom at 9.25

@ 10.25 a.m. start haul. ~~Total at this time of~~~~@ 2.37 p.m. ^{see #38} Sound 237 fms~~

got 3 Bathynomus larger 10 1/2 inches long.

~~2 large Geryon.~~

2 1/2 Buckle Penaeid shrimp

1 hermit

6-8 large munnidas discarded
half of this were regenerating over the chelae

large & small munnidas

About 250 of Penaeid shrimp

discarded + 4-5 of munnidopsis curirostra?

Small munnide 50 discarded = munnide longipes
1 munnide decora Benedict found debris at bottom of bathynomus

Haul # 38-30 July 31, 1930
220-237 fms.

At 12 noon 220 fms. landing.

Net over night after, in bot. at 12.50
haul little short of 1 hr.

Start haul in 1.47 p.m. had difficulties
with winch spread down near 3 p.m.
before net was on deck. Sounded
while ship was at a stand still at
sounded + 2.37 p.m. got 237 fms.

At 3.45 started back

15 of large
puckage
Peneids
given away

Cruise N.E x N. log 65.65
= 15.65

at 5.10 p.m. cruise

E.N.E. log 25.70

Red log @ 6.45 p.m. log 34.60
15.65

about 28
miles ±

3 hours = 28.95 knots

Got 5 Bathynomus + five rocks, little clump
of murex. gave latter
2 large Geryon. + large + 2 rocks to G. -
2 new Penaeids

Aug. 1 + 2, Friday + Saturday 1930

Worked around but putting up with
from deep sea hauls.

For large could find no name in Breder
Munidopsis + a bunch of Penaeids found
I have no literature

8. Bathynomus. Mrs. Seale gives 740
as least depth. 3 first haul 180-220 fms
5th haul, haul 220-237 fms

Could not have been in more than 237 fms. 8 specimens

Aug. 2, 1930

4, 4.5 Phil brought me small
Calappa thrown up by grapples
he caught ^{on reef} off N.W. side of Soggerhead
Key

Aug. 3 found grapsus dead in
jar partly filled with salt water
so could revive itself out. was
put in July 21, died night of
Aug. 2 as I was very full in eve.
of second. Fl. Carapace 5.9 mm
greater width

Aug. 3, 1930 #39 - 30 collected over the
Capr mill with hood ~~collected~~
~~for 25 miles~~ for crabs for
Mr. Vaughan, and for debris
resulted a 'microphysa' like
with dark purple bands & cream?
fingers (otherwise color noted)
and five little xanthids also color
noted All 20 an! of the green Squilla

Must have been
Mithras holderi June 1931

#40 - 30 Young Single got 2 little crabs
from among turtle grass this
day lot small with some smaller.

Aug. 4. Went down with diving hood
+ planted some glass tubes with
#41 - 30 2 foot long stout wires beside as
markers. bet dock & N. end of
island, also hauled up hollow
rock + some turtle grass, but
for aug. with small tubes for depth.
The rock had squilla in it + 3 Mithras in it
+ xanthid in it come out later.

Small
Xanthid
3 Mithras
+ Squilla

(Written Aug. 4, 1930)

Aug. 3, 1930 #39-30 cont'd.

The two *Urogeles* were found in the
 which I have complete all but the
 bend I'm sure; female was the
 only one that was noticed hanging
 of cracked open bones when brought
 me. Two external openings very
 small just big enough for ventilation
 when the female, saved feces
 for ~~intestinal~~ examination; also have
 bit of lining of bones examined.
 Thin piece of hyaline or crusted rock
 was saved separately. Very common
 among shrubs of *Calliandra* type
 these self-immured prisons, in which
 the happy couple live till death do
 us part. It is conceivable that
 deaths of one ends both due to poison
 of decay. The right hand hole

got poked twice as large during the male
 and. I didn't know he was in there
 until I took another look into burrow
 in rock which I had purposely
 set up on end to drain + dry her
 quicker + better. What really called
 my attention to rock this a.m.
 at about 9.30 - 9.45 was little
 green clawed at signalphens that
 had wormed his way out of one of
 the many holes + he dead, but don't
 not yet dried up on surface of
 rock; but in fact that I want to
 save the *Urogeia* burrow I
 would have caught the mate to it.
 ♂? signalphens which must still be in
 the rock.
 (see also note)

female *geia* pair
 in some nest since
 C. B. Wilson formula
 for yellow tuft on back that
 after all maybe freed out
 ovaries.

Aug. 5, 1930, 7.00 a.m.

(B) ~~B~~ living & active this a.m.

(A) { all dead. were
(D) { alive & apparently
doing well ~~last night~~
last night at 9 p.m.

(A) ♂ 38.3 mm wide.

(D) ♂ 41.5 mm wide ^{greater width} carapace

(E) also dead. largest & longest looking of lot ♂ 52. mm. wide

Put. New animals in each tank except.
♂ 50.5 mm greatest width of carapace
dead at 9.20 a.m. after fully in salt.

(A₂) deep salt water large crab which escaped
me yesterday & which I stepped on very
much alive in tub in docks this a.m. had
climbed over pile of paper & was still very
strong & active this morning.

(B₂) same crab as on Aug. 5 still alive
shallow salt.

(C₂) new crab for ureca control
deep salt water in salt water control

(D₂) shallow salt
new crab for control

(E₂) " " " "

C₂ D₂ + E₂ all about same size small crabs. C₂ with very few legs.

Aug. 9, 20
Died

11/11/30

#42-30

un coll. Aug. 4. 1930

Collected Aug. 5/30

Hexter brought me two crabs from
Humb. A *Pagurus* herberti of slaty
blue & a spider with purple ascidia
on back; ^{crab} better color noted.

Beneath the ascidia, either side as viewed
from below a sponge; as soon as a foot
out in formation, a pretty good sized
amphipod dropped off.

Aug. 5/30

From off floating plank of barnacles tied
to laboratory dock got few very young
Brachygraps and 3 worms picked.

worms largely brownish, body lighter

Aug. 5th, 1930 from a lobster
carapace that Visscher put out in
small boat shaped live can to skeletonize
after partly drying shook a lot of hermit
rooked up nicely in water & he gave me some
for museum

Aug. 5 - 1930 cont'd. At 10 ^{a.m.} 205

C₂ crab in deep fresh water had beaked over on bottom of jar; ~~it~~ was unresponsive to poking or moving about with forceps. Picked him out of water & took in hand for picking when I noticed bubbling noise below maxillipeds, dropped him back in water was not out more than a few seconds, but was enough to revive him. ~~When~~ ^{When} it moved about on bottom of jar when disturbed; had shed one of its legs
other crabs all seemed O.K., at 10 ^{a.m.}

At 10 ³⁵ ^{a.m.} all seemed O.K. except. One in fresh water seemed down & not even when picked up & turned over ~~under~~ ^{under} water showed no real signs of life, but on bottom not felt bubbling bubbling to ~~or~~ start up after few seconds & in 3-4 mins showed add. bubbling put in dry jar

11 ^{a.m.} ^{crab} in deep fresh water did not ~~improve~~ ^{recover} after all, young male 30.8 mm. wide with both pchelifer & just his ambulatories hanging shed off in jar

All O.K. 12. & at 1.00 o'clock

Ret'd at 4 ³⁰ p.m. & crab in dry jar E₂ was dead ♀ carapace 31.5 wide

206

Shallow Aug. 6, 1930

7⁰⁰a.m. Salt + shallow fresh water crabs O.K.
 Look at about each day. O.K.

at 11 a.m. crab in F.W. had lost three
 legs + was bubbling profusely.

12.30 fresh water crab quite feeble.

2 p.m. dead! male carapace 36 mm. wide
~~Salt water crab still alive. Only 2 ambulatory + dead left~~

3.30 p.m. salt water crab still good, changed water in him

Aug. 7, 1930 Crab in shallow salt water
 still active and growing well.

Aug. 7. @ 11³⁵ Fleeter brought me a fairly
 large, healthy looking *Grapsoidea* put
 it into a dry jar. at this time 11³⁰a.m.

Aug. 8 (thy crab ok? ad shallow salt still
 O.K. at 7 p.m.)

(thy crab dead at 7. may have died at 3
 just about p.m.)

Salt water are still good

Aug. 10 died bet. 11 and 3. end of salt water crab.
 36 mm wide ♂? at

Aug. 5-1930 squilla was dug up with shovel while digging for Callianassa 207

#43 - 30 went digging for Callianassa in higher of Song Key makes with the reef. 3 spec. color noted + claws only 2 male

#44 - 30 several small ship parts picked off both overturned rocks on Bird Key reef. Aug. 5, 1930 - color noted. Also gave me some barnacles from P. Angus Hester steamed here.

Aug. 6. Color noted various Portunids. Mail day sort of a semi-official holiday. Everybody wanting to lay off but none wanting to admit it.

Aug. 7. 7:30 a.m. crab in shallow salt water still doing well.

Got a few more hebia from Solster heads [and carapaces] in live car also at dock. West side of Almyntary from mouth of

noted Salmon red, eyes bay but no other color. by Humphrey

I examined these the first day after putting over fresh head gave nothing. second day thanked hipp + upt of head over dish + got about 10 viscer got this lot on third day. Shall bring forth

#44-30 Aug 7, 1930 ^{Sipping beach}
~~Bonkey~~ ~~set~~

Collected over flat where I got Callianassa yesterday. Saw a large brownish-yellow C. canthochinus in large hole came up & muffled claws when I spilled a little sand in it.

Picked up several similar holes got
 Squilla of species in 43-30 (Aug. 5-1930)
 Color noted

Watched another hole. ^{Time} Little blue or yellow fish played in and out, dropped in some sand & raised little Xanthid tried to catch ^{but he literally tumbled out of sight in an instant} ~~and~~ after a little he came out again & whether you believe it or not he he tried, rather began moving some of the ~~pieces~~ off coral lying about hole into it, rather over it as can be noticed some holes are ~~these~~ more or less concealed by coral frags. Just got at & sort of black sandy dump. They ~~also~~ slide down ^{at bottom of} ~~the~~ shallow (funnel) or depression ^{at bottom of} ~~under~~ which hole lies

#44 - 30 Aug. 7, 1930 Cont'd

Also shovelled out an *Arenicola* ^(+ one long thin worm found at 10' deep.)

my excavating & turned up five or more crabs, one of one species, 1 of another

color noted, & picked up with bit of sand on tip of shovel the place where a little Portunid or Xanthid, rushed into concealment and so got the fellow.

~~No Callinectes taken this day but~~

~~one~~

210 Aug. 8, 1930 = In channel bet
#45-30 middle ground and white
shoal
Left Lub at 7.55 a.m.

Sound 10 fms. off fort buoy marked on chart.
net on bottom at 8.30 Haul up at 9.00

Course: for $\frac{1}{2}$ distance N.W. other half

W.N.W. 8 buoys at end W.S.W.

Sponges galore, (sticky bottom) no shells much
of Xanthids, 3 species quite different colored
Synalpheids, 2 yellow kinds one with blue
other with pink fingers, + 2 red ones with green
fingers = 1 kind.
Portunids

#46-30 here at 9.20 a.m. Along E side Soggy Lead
haul in at 9.45 key
at 10 fms.

Course noted on chart: = S.W.XS

weedy bottom lots of Hicysta
number of Podochelone.

Portunids

Aug. 8, 1930 Channel haul, east
 #47-30. her down at 10.05 start
 up at 10.35. ^{let 10 min}

Course on chart: S.W. x S. $\frac{1}{2}$ S. ^{east side of Key}
 Loggerhead lights N.N.W. at end of haul.

Also weedy bottom as before, haul looked
 much like it; but both #46-30 & #47-30
 are quite diff. from #45-30. ^h

Aug. 9, 1930

#48-30 her on bottom at 8.25

Loggerhead Lights. W.N.W.

Start haul up at 8.49 a.m.

Course for 5 mins. little W. of S; for 25 mins
 S.W. $\frac{1}{2}$ S.

#49 ^{was 49 but # cancelled} ^{entire haul $\frac{1}{2}$ dead 9-9.30}
 haul, but remembered
 haul as that 49 was orig. S.W.
 Haul alongside White sh

30 min haul. her down at 9.40. just
 below S of C. 3 buoy. her started
 up at 10.10

#50 her over at 10.30 ^{start} up at 11 a.m.
 red N. 8 buoy W. S.W. in Brilliant shoal
 channel. ~~Aug. 10 cleaned up Aug. 8 dredge~~
 hauls.

Aug. 11. (Monday) 1930. Sat work all day

Sues. Aug. 12 Sat work fore noon, went out crabbing in afternoon for sand "portunids" for the Smiley got 13 ornatus + one more, wither chelated and four little *P. depressifrons* in about 10 hands of seine (+ of ornatus with dip net, + Billy got got a *Pseudosquilla* ~~at~~ *ciliata* with dip net.

Went out with electric light boat dark after sunrise + moon rise effort of which was delayed by heavy clouds in front. fish bet 8.30 + 10.00
Got number of flying fish + several plankton samples, worms too + *Ishnura* color noted.

Aug. 12. Large Anomala Bull. Ly had originally Dipseche found a gap. This had hand hand of large chelated from middle of free edge of carpus to end of fixed finger 40 mm. long. Fixed finger closed from base of art. on upper edge to tip 21 mm. long. Greatest width of large hand 32 mm. This ant. found in Loggerhead Key.

Aug. 13, 1930

Aug. 14, 1930

Worked over rocks & weeds from th. Graves
live car & from the live car, lobster head
for hehalia, ^{also} got an Osha ^{from Graves live car}
material

Aug. 14, Went over with Hood first in
20 foot hole in reef wall west of lat. dock.
quite wild scenery & lots of holes, rocks &
crannies. Saw him so much when I first
went down I thought I'd have to come
up again, but soon got better so that
I didn't notice them.

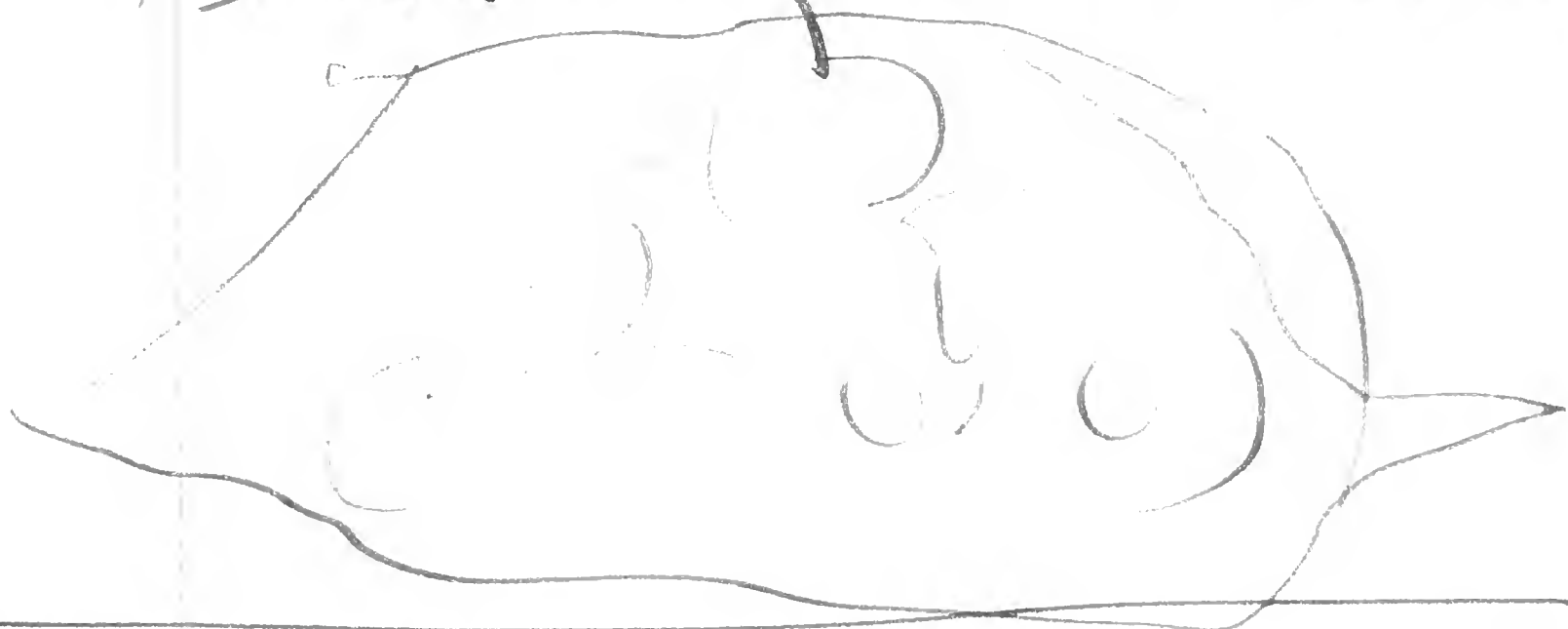
If fingers are tender or skin is scratched
or broken millepora gives quite a fit.
painful(?) as formalin in cut fingers ^{though}
fishermen & Key Westers call it pebbles ^{also}
coral. not a bad name. ^{but} ^{it} ^{is} ⁱⁿ ^{it}

Algae give off a pungent, acid
substance, far smell in water, & after
some rough weather, one can appreciate it
as a in water while swimming

Aug 16, 1930 Saturday, a day of ^{mise.} much and nothing. In afternoon while packing & paddling Th. Single asked me in this Saturday or Sunday, I answered Sat. Oh! said he I thought it might be Sunday. (By way of reminder? Ah, Gowanlock went out with launch for another summer & so excused special notice or got tired of being busy!

The C. marginalis I saw in tide pool yesterday evening while walking around island with Bullington & Visser. I did not see this a.m. nor on two later visits this p.m. after supper but both before & after sunset. I don't know how outside of clams are exposed, but inside large China, blue and white. Paddles particularly & paddles a sort of rufous & the canopce is mottled

in roughly circular areas of a tan (^{supper} ~~rusty~~ category) and blue black + black blue green I guess. In the very striking at distance



Be. 10 + 11 went with Th. Smiley to put charge of dynamite in ^{small} flat, of ~~slimy~~ beach at Song Key. He dug a 4 foot dia hole down 2 1/2 ft - three feet down, but got nothing. Much though I poked around considerable with dip netting though sand & mud + nothing was remaining coral fragments. Got about six of old little Squirrels I dug up with Callianassa some days ago a Crangon, + 2 Upogebia + a small Penaeus, Collected the last but

items. The 13 boy scouts & five adults
 that came down with them to stay
 a week at the fort. I did not get
 along so well with the blackish water
 in the cisterns & we begged but to
 no avail they & set them on Soggyhead
 Key where they could stay in light-
 house boat shed. Such a bunch
 of junk they seemed to have. We
 got them safely over, but before
 we called for the ^a Coast guard
 cutter had called, & ordered
 them off. (There to goodness only knows)
 but as they could say they were going
 over to Soggyhead ^{where} they had
 enough. ^{I should have} gotten the per-
 mission of ^(a coast guard) Marshal Commandant
 Key went before coming out for this
 had ~~has~~ fire on beach tonight.